48. The method of claim **47**, wherein applying a potential difference comprises selecting a potential difference such that, over the target area, the electric current has a current density between 20 and 80 amps cm-2.

49. The method of claim **47**, wherein applying a potential difference comprises selecting a potential difference such that, over the target area, the electric current has a current density between 30 and 70 amps cm-2.

50. The method of claim **47**, wherein maintaining the rate of draw comprises selecting a rate of draw between 2 and 20 millimeters per minute.

51. The method of claim **47**, wherein maintaining the rate of draw comprises maintaining the rate of draw such that the space is between 0.2 and 0.7 millimeters.

52. The method of claim **47**, wherein passing an electrolyte comprises selecting the electrolyte to be an aqueous solution of an inorganic salt.

53. The method of claim **52**, further comprising selecting the salt from the group consisting of a nitrate, a chloride of sodium, a bromide of sodium, a chloride of potassium, a bromide of potassium

54. The method of claim **52**, further comprising selecting the salt to be sodium nitrate.

55. The method of claim **53**, further comprising maintaining the salt at a temperature of between 35 and 45 C, and/or at a specific gravity between 1.1 and 1.25, and/or at a pH of between 8 and 10.

56. The method of claim **55**, further comprising maintaining the salt at a temperature of between 38 and 42C, and/or at a specific gravity of about 1.18, and/or at a pH between 8.5 and 9.5.

57. The method of claim **55**, wherein passing an electrolyte comprises selecting the electrolyte to include a mineral acid.

58. The method of claim **57**, further comprising selecting the mineral acid from the group consisting of sulphuric, nitric and hydrochloric acids.

59. The method of claim **47**, further comprising providing a tube having a start-profile having a maximum diameter less than the diameter of a largest circle capable of fitting in the end-profile.

60. The method of claim **47**, further comprising inclining the electrode with respect to the direction of draw, so that the target area of the tube is increased.

61. The method of claim **47**, further comprising selecting the creep resistant alloy to include the following constituents in percent by weight as indicated: carbon, 0.1-0.5; chromium, 20-35; nickel, 20-45; niobium, 0-2; tungsten, 0-5; additions, 0-1; and the balance containing iron.

62. The method of claim **47**, further comprising selecting the creep resistant alloy to have a mean 100,000 hour rupture value of more than 6 MPa at 1000C.

63. A tube made by the method of claim **47**.

64. The tube of claim **63**, further comprising a non-circular internal profile, the cross-section of which has a length that is at least 10% longer than the circumference of the smallest circle that encompasses the entire internal profile.

65. An electrochemical machining apparatus for machining an end-profile on the inside of a tube having a start-profile, the apparatus comprising:

a starting mount and an ending mount for mounting the tube, each being adapted to seal against one end of the tube and to supply one end of the tube with electrolyte;

an insulated conductive rod extending through an aperture in one of the starting and ending mounts;

an electrode having a profile corresponding to the end-profile and mounted on a first

end of the insulated conductive rod;

a power source providing an electrical voltage between the tube and electrode;

a draw operatively connected to a second end of the rod to drive the electrode into the bore of the tube;

the rod being long enough that the electrode can be within the confines of either mount without the draw contacting the other of the mounts.

66. The apparatus of claim **65**, wherein the end-profile comprises a non-circular end profile having, in cross-section, a length that is at least 10% longer than the circumference of the smallest circle encompassing the entire end-profile.

67. The apparatus of claim **66**, wherein the electrode comprises a front end and a rear end, the rear end having a final section of constant cross-section.

68. The apparatus of claim **67**, wherein the final section comprises a section less than 2 millimeters in length.

69. The apparatus of claim **68**, wherein the cross-section of the front end has an overall diameter less than or equal to a minimum diameter of the start-profile of the tube and the electrode tapers from the rear end to the front end.

70. The apparatus of claim **65**, wherein the end-profile comprises a plurality of peaks, a plurality of troughs adjacent to each of the peaks, and a plurality of sinusoidal sections connecting each of the peaks with an adjacent trough.

71. The apparatus of claim **70**, wherein the electrode further comprises, at a front end thereof, a plurality of insulated sections, the insulated sections being disposed to suppress, during machining of the tube, removal of material from the peaks of the end profile.

72. The apparatus of claim **71**, wherein the electrode further comprises, at a rear end thereof, an uninsulated section for removal of material from the complete circumference of the tube bore.

73. The apparatus of claim **65**, wherein the electrode comprises:

a front guide having a cross-section corresponding to the start-profile of the tube;

a rear guide having a profile corresponding to the end-profile of the tube; and

a passage for enabling flow of electrolyte along the tube past the electrode.

74. The apparatus of claim **73**, wherein the end-profile includes peaks and troughs, and wherein the rear guide is shaped to provide a close sliding fit to the peaks of the end-profile and to form the passage between spaces bounded by troughs of the end-profile.

75. The apparatus of claim **73**, wherein the front guide includes slots in its surface, the slots defining the passage.

76. The apparatus of claim **65**, wherein the rod extends through the starting mount.

77. The apparatus of claim **76**, further comprising an insulated rod extension connected to the power source and to the electrode and passing through an aperture in the end mount.

78. The apparatus of claim **65**, wherein the tube comprises creep resistant alloy.

79. The apparatus of claim **78**, wherein the creep resistant alloy comprises the following constituents in percent by weight as indicated: carbon, 0.1-0.5; chromium, 20-35; nickel, 20-45; niobium, 0-2; tungsten, 0-5; additions, 0-1; and the balance containing iron.

80. The apparatus of claim **78**, wherein the creep resistant alloy has a mean 100,000 hour rupture value of more than 6 MPa at 1000C.

81. A tube made by the apparatus of claim **65**.

82. The tube of claim **81**, wherein the tube comprises a creep resistant alloy.

83. A method of forming a furnace tube, the method comprising:

providing a molten creep resistant alloy;

casting the alloy in a rotating tubular mold to form a tubular blank having a central bore; and

electrochemically machining a non-circular profile inside the bore.

84. The method of claim **83**, wherein electrochemically machining comprises drawing a correspondingly shaped electrode along the tube while passing electrolyte along the tube.

85. The method of claim **83**, further comprising boring the blank to form a circular bore of predetermined radius.

86. The method of claim **83**, wherein electrochemically machining comprises:

providing an electrode having an external profile corresponding to a desired end-profile of the tube;

drawing the electrode from a first end of the tube to a second end of the tube;

applying a potential difference across a space between the tube and the electrode;

passing electrolyte between the tube and the electrode; and

maintaining the rate of draw of the electrode so as to maintain an extent of the space.

87. The method of claim **83**, wherein electrochemically machining is carried out on electrochemical machining apparatus comprising:

a starting mount and an ending mount for mounting the tube, each being adapted to seal against one end of the tube and to supply one end of the tube with electrolyte;

an insulated conductive rod extending through an aperture in one of the starting and ending mounts;

an electrode having a profile corresponding to the end-profile and mounted on a first end of the insulated conductive rod;

a power source providing an electrical voltage between the tube and electrode;

a draw operatively connected to a second end of the rod to drive the electrode into the bore of the tube;

the rod being long enough that the electrode can be within the confines of either mount without the draw contacting the other of the mounts.

88. The method of claim **83**, wherein providing the molten creep resistant alloy comprises providing an allow having the following constituents in percent by weight as indicated: carbon, 0.1-0.5; chromium, 20-35; nickel, 20-45; niobium, 0-2; tungsten, 0-5; additions, 0-1; and the balance containing iron.

89. The method of claim **83**, wherein providing a molten creep resistant allow comprises providing an allow that, when solidified, has a mean 100,000 hour rupture value of more than 6 MPa at 1000C.